Title: More Catch and More Release, continued

In a 1991 Chinook Salmon study by ADFG in the Kenai River, “The average mortality of C&R fish was 7.6% for all experiments combined, and ranged from 10.6% in 1989 to 4.0% in 1991. Most mortality took place within 72 h of release. The survival of chinook salmon that were injured in the gills or bleeding was significantly reduced; however, the frequency of gilled and bleeding fish was small in all experiments.”

Several fishery scientists (from Oregon and Canada) have studied this topic and the results revealed some distressing, yet interesting, information. Fish were exercised in the laboratory and the physiological stress level of the fish was measured by the amount of metabolic wastes in the blood. Some of the exercised fish were then lifted briefly (30 and 60 seconds) out of water and their stress level was re-measured. Those fish that had been *exercised and lifted from the water had a stress level that was greatly increased* over those that had been only exercised! Now, this is distressing!! In other words, an exercised fish becomes stressed; but, if that fish is lifted even a minute or less out of water, the stress level is increased while the chance for *survival is reduced*.

What is happening? When fish are in water, their body and their organs are supported by the water. This includes the gill filaments which are supported and spread widely to enhance gas exchange between the water and the blood (oxygen - in; carbon dioxide - out) and expel metabolic wastes. When a fish is out of water, the delicate gill filaments are collapsed and gas exchange is inhibited so the stress level increases. *Delayed mortality* may continue for 4 to 12 hours. (In other words, you may feel good to practice C&R released, but dead, fish cannot spawn.)

Other factors contribute, too. Stress is cumulative: s*pawning fish* are more vulnerable to additional stress. *Parasite loads or diseases increase stress. Warm water* conditions affect trout and salmon. Inadequate *food*. You get the picture.

What does this mean to you and me? And, especially, to the fish? What is the bottom line? Remember that *stress is cumulative,* and many factors may contribute. More cumulative stress means longer recovery and greater risk of death. Also remember, we can control some of the stress factors. If we catch a fish and plan to release it, it must be done with the smallest amount of stress to the fish. First; *minimize the stress of catching*, playing and handling; second, to avoid any further increase in the stress level, slip the hook out of the fish *without removing the fish from the water* (e.g., with a hemostat or a pliers).

A study of Atlantic Salmon emphasized the responsibility of anglers in practicing effective catch and release. The angled and released Atlantic Salmon were distributed in similar locations throughout the river during the spawning season compared with control fish. Among the caught and released Atlantic Salmon, 17% were recaptured by anglers, which was similar to the rate of recapture of the control fish (21%). Ultimately, individual and population fitness was not likely to be significantly compromised as a result of catch and release. “Catch and release can therefore be considered a tenable strategy for balancing the costs and benefits associated with the recreational fishery.”

From another study: “These results suggest that *handling*, especially *air exposure*, is the primary concern and substantially impacts the short-term postrelease mortality of sockeye salmon, which has important implications for management”.

If you will be releasing a fish, keep it in the water until it is ready for release. If you must take it out of the water, do it as briefly as possible. Another research team evaluated effects of air exposure in 2005. Brook Trout were exercised for 30 minutes and held out of water in a net for durations of zero, 30, 60, and 120 seconds. Afterwards, the fish were placed in a swim tube and forced to swim until they were exhausted and drifted to the end of the tube. Results showed that exercised fish held out of water longer than 60 seconds had a dramatic 75 percent decrease in swimming performance compared to the other treatments. Many were unable to swim at all. With more exercise, body fluids become more acidic and blood lactate, a metabolic waste product, increases.

Fish are designed to live and function in water. In water, fish gills are infused and supported by the water so they can function. In air, water is drained, the gills collapse, gills become nonfunctional, and the respiratory system is shut down. Different species and different conditions will lead to different results, but air exposure is not a good thing. The bottom line: do not exhaust the fish, keep it in the water, and help it recover.

Evidence is piled higher and deeper. Need I say more? Catch and release is a good management tool. It works. Fish can be caught more than once and caught and released to spawn. But ONLY if done with care. The rules are simple, but often difficult.
1) Play the fish no longer than necessary.
2) Handle the fish carefully and gently as possible.
3) Avoid removing the fish from water.

The alternative... a lot of large-sized Chinook Salmon were caught from the Kenai River during the 1980's and the biggest spawners were removed to hang from a wall. Now, there is just not so many. C&R of those larger fish means more "large genes" (e.g., older age classes) are transferred to eggs.

So; if this is not stressful enough, I am stressed to stress to you that if you want to release a fish with the least amount of stress to the fish (and maybe, less stress to you, too) then I must stress that you should not take the fish out of the water. I hope this matter of stress has not been too stressful and I think it has been stressed enough. (Sorry for that.)

(BTW... those big Yelloweye Rockfish you and I like to catch... put them back. Killing one is like chopping down a redwood tree. These fish may live 120 years old; i.e., born before WWI. see: http://www.adfg.alaska.gov/index.cfm?adfg=fishingSportFishingInfo.rockfishconservation)

Do you have a question for FISH TALK? Contact Bill at karelbill@gci.net.

Bill has published ***Fishes of the Last Frontier****, Life Histories, Biology, Ecology, and Management of Alaska Fishes* and ***Letters from Alaska****, The Inside to the Outside.*

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